

THE WOODSTOCK ACADEMY
BOARD OF TRUSTEES
NOTICE OF MEETING

BUILDING AND GROUNDS COMMITTEE
AGENDA

Date: Monday, January 14, 2019
Time: **6:00 p.m.**
Location: Fireside Room - South Campus

1. Call to Order
2. Citizen's Participation
3. Secretary's Report – Minutes of November 12, 2018
4. Tennis Court Agreement / Discussion
5. Replacement Tank Project
6. Roof Project Update
7. Discuss Academy Building's Clock
8. Bentley Wetlands Mitigation
9. Facility Study / Audit
10. Other
11. Citizen's Participation
12. Adjournment

The Woodstock Academy prepares all students by providing diverse opportunities through a rigorous curriculum and a variety of programs in order to cultivate the necessary skills to become lifelong learners and global citizens.

**MINUTES OF THE MEETING
THE WOODSTOCK ACADEMY
BOARD OF TRUSTEES
BUILDING AND GROUNDS
COMMITTEE
November 12, 2018**



These minutes are for
informational purposes only.

PRESENT: Beckwith, Martha; Bellerose, Jim; Bentley, Cary; Blackmer, Robert; Kelly, Paul (7:02); Morse, David; Guillot, Bill; Sandford, Chris; Teed, David (6:45); Woodland, Julie
ABSENT WITH NOTIFICATION: Johnston, Kevin; Musumeci, Joe

1. Call to order

The meeting was called to order by Chairman Blackmer at 6:30 p.m.

2. Citizen's Participation – None.

3. Secretary's Report—Minutes of September 10, 2018 and October 29, 2018

MOTION: (Morse/Bellerose) To approve the minutes of September 10, 2018.

Unanimous

MOTION: (Bellerose/Beckwith) To approve the minutes of October 29, 2018.

Unanimous

4. Review Projects

5. Replacement Tank Project Update

6. Roof Project Update

B. Guillot provided explanations and updates about the North Campus Wall project (nearly complete); the Underground Storage Tanks projects (locations, cost of bidding, deadlines); and the Roof Replacement projects (bid status, timetable). Discussion ensued and questions were answered.

7. Discuss Academy Building's Clock

C. Bentley and Head of School Sandford shared information about the current condition of the clock tower in the Academy Building. Discussion ensued, and included repair option strategies with their associated costs. It was agreed to get quotes from a second repair company.

8. Facility Study / Audit

Based on the recommendation of Bill Kummel of Rational Partners, the group discussed the need to have a comprehensive facility study performed. With two campuses to manage and maintain, having a long-term plan to manage the maintenance and life expectancy of WA's physical assets is critical for planning. Based on the square footage, cost is estimated at 80-90K. It was agreed to revisit this topic at the April or May B&G meeting.

9. Other – None.

10. Citizen's Participation – None.

11. Adjournment

MOTION: (Morse/Bellerose) To adjourn the meeting at 7:06 p.m.

Unanimous

Respectfully submitted,

Julie Woodland

Julie Woodland

Board Clerk

The Woodstock Academy prepares all students by providing diverse opportunities through a rigorous curriculum and a variety of programs in order to cultivate the necessary skills to become lifelong learners and global citizens.

**Agreement Between the
Town of Woodstock Recreation Department and
The Woodstock Academy Athletic Department**

THIS AGREEMENT, made by and entered into this ____ day of _____ 201____, by and between the Town of Woodstock Recreation Department, hereinafter referred to as "Department," party of the first part, and The Woodstock Academy Athletic Department, hereinafter called "The Academy" party of the second part.

WITNESSETH

The Department agrees to permit The Academy to use the tennis courts adjacent to the Woodstock Middle School.

1. The Department allows The Academy to use the courts exclusively for practice and games during the spring athletic season at no cost. Other than the allotted times for the tennis team, the courts will be open to the community in ways outlined by the Department.
2. The Academy employees and students shall abide by all town and school regulations and behavior expectations.
3. The Academy will work in conjunction with the Department to upgrade the courts and maintain the integrity of the playing area during the life of this agreement.
4. During the period of this agreement, The Academy will have the ability to name the courts, in conjunction with the Department.
5. The Academy and the Department will work together to create a regular schedule for the courts.
6. Any revenue generated from court rentals or camps shall be used to maintain the courts.
7. The Academy hereby agrees to indemnify the Department against all claims, demands, and liability for any loss, damage, injury or other casualty to persons or property, during the court's usage by The Academy, its students and its guests. The Academy agrees to carry liability insurance covering The Academy's use of the courts and to provide a certificate of insurance naming Town of Woodstock as an additional insured.
8. This agreement will commence at its signing and be in effect for ten (10) years. If either party wants to cancel the agreement, notification must be made in writing. It is understood that if the agreement is cancelled prior to the tenth year, the cancelling party must reimburse the other for half of the expense of improvements made and paid for by the other party.

(UST) UNDERGROUND STORAGE TANK REMOVAL AND
(AST) ABOVE GROUND STORAGE TANK INSTALLATION

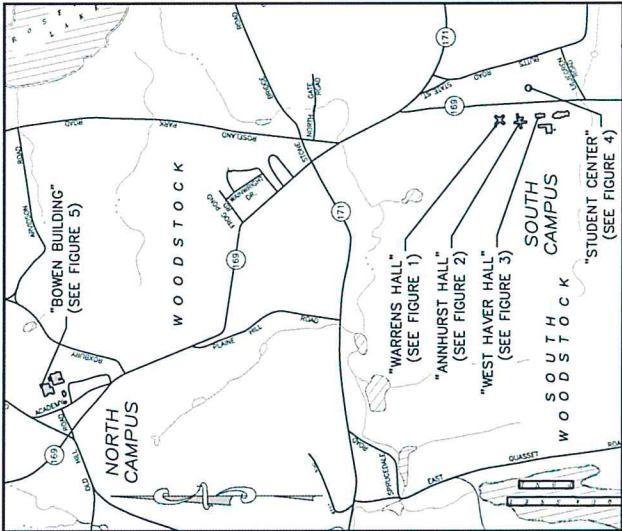
PREPARED FOR

WOODSTOCK ACADEMY
NORTH CAMPUS AND SOUTH CAMPUS

ROUTE 169

WOODSTOCK, CONNECTICUT

DECEMBER 27, 2018



KEY MAP



DRAWING INDEX	
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	"WARRENS HALL" FIGURE 1
3	"ANNHURST HALL" FIGURE 2
4	"WEST HAVER HALL" FIGURE 3
5	"STUDENT CENTER" FIGURE 4
6	"BOWEN BUILDING" FIGURE 5
7-8	CONSTRUCTION DETAILS



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IMAGE DETAIL

MAP REFERENCE

1.) SITE PLAN PREPARED FOR HYDE SCHOOL 124
ROUTE 169 WOODSTOCK, CONNECTICUT. SCALE: 1"=60',
DATE: MAY 18, 2009 SHEET S1, PREPARED BY LEMARD
ENGINEERING, INC.

NOTES

1.) THIS PLAN WAS COMPILED FROM OTHER MAPS,
RECORD RESEARCH OR OTHER SOURCES OF
INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING
BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY,
AND IS SUBJECT TO CHANGE AS AN ACCURATE FIELD
SURVEY MAY DISCLOSE.

2.) LOCATIONS OF SITE BUILDINGS AND OTHER SITE
FEATURES ARE APPROXIMATE, BASED ON PREVIOUS
MAPPING AND FIELD OBSERVATIONS MADE BY CME.

LEGEND

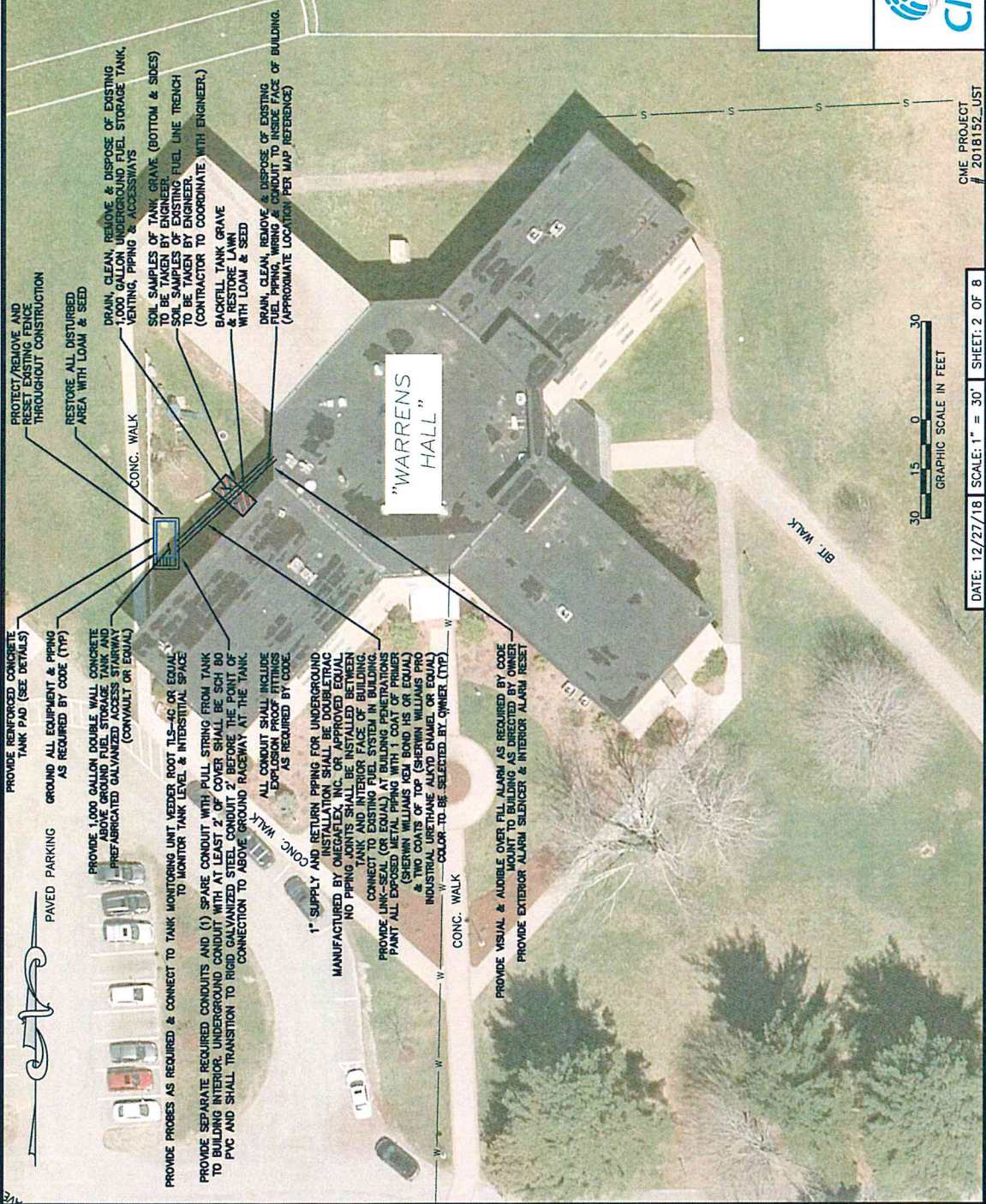
- EXISTING UNDERGROUND STORAGE TANK (UST)
- WATER LINE
- SEWER LINE
- UNDERGROUND FUEL LINE

SKETCH SHOWING APPROXIMATE LOCATION
OF UNDERGROUND STORAGE TANK (UST)
WOODSTOCK ACADEMY SOUTH CAMPUS
"WARRENS HALL"
ROUTE 169
WOODSTOCK, CONNECTICUT

FIGURE 1

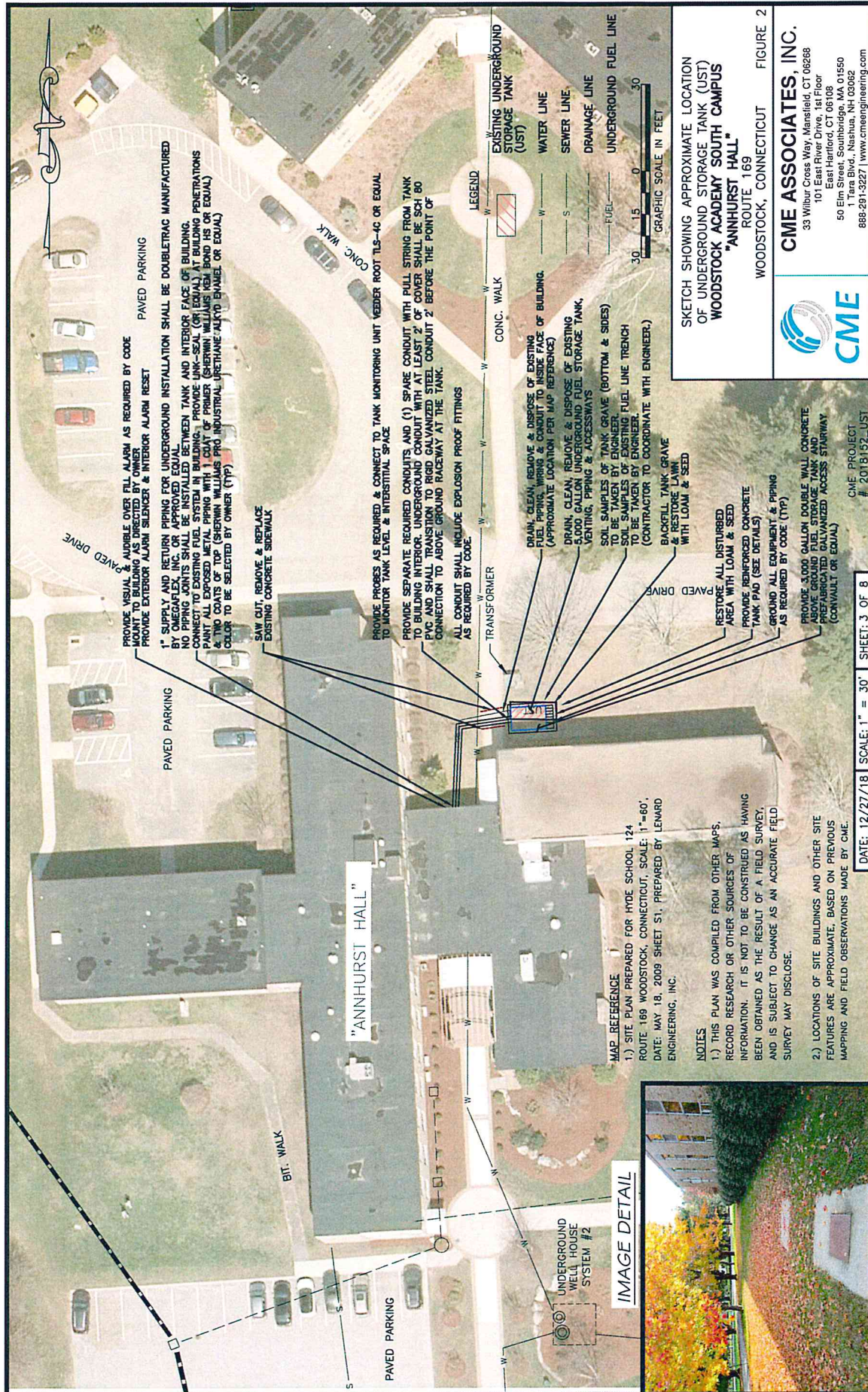


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CME PROJECT
2018152_UST

DATE: 12/27/18 SCALE: 1" = 30' SHEET: 2 OF 8



MAP REFERENCE

1.) ALTA/ACSM LAND TITLE SURVEY PREPARED FOR HYDE SCHOOL EAST SIDE OF ROUTE #169 WOODSTOCK, CONNECTICUT. SCALE: 1"=40'. DATE: 1/12/1996 SHEET 1 OF 1. PREPARED BY KMP ASSOCIATES, ON FILE AS DWG 1511.

NOTES

1.) THIS PLAN WAS COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY, AND IS SUBJECT TO CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.

2.) LOCATIONS OF SITE-BUILDINGS AND OTHER SITE FEATURES ARE APPROXIMATE, BASED ON PREVIOUS MAPPING AND FIELD OBSERVATIONS MADE BY CME.

PROVIDE REINFORCED CONCRETE TANK PAD (SEE DETAILS)

GROUND ALL EQUIPMENT & PIPING AS REQUIRED BY CODE (TYP)

PROVIDE 3,000 GALLON DOUBLE WALL CONCRETE ABOVEGROUND FUEL STORAGE TANK AND PRE-ABRICATED GALVANIZED ACCESS STAIRWAY (CONVAULT OR EQUAL)

WELL HOUSE SYSTEM #1

RESTORE ALL DISTURBED AREA WITH LOAM & SEED

SAW CUT REMOVE & REPLACE EXISTING PAVEMENT

DRAIN, CLEAN, REMOVE & DISPOSE OF EXISTING FUEL PIPING, WIRING & CONDUIT TO INSIDE FACE OF BUILDING. (APPROPRIATE LOCATION PER MAP REFERENCE)

DRAIN, CLEAN, REMOVE & DISPOSE OF EXISTING 5,000 GALLON UNDERGROUND FUEL STORAGE TANK. EXISTING PIPING & ACCESSWAYS TO BE TAKEN BY ENGINEER.

SOIL SAMPLES OF EXISTING FUEL LINE TRENCH TO BE TAKEN BY ENGINEER. (CONTRACTOR TO COORDINATE WITH ENGINEER.)

BACKFILL TANK GRAVE & RESTORE LAWN WITH LOAM & SEED

PROVIDE PROBE AS REQUIRED & CONNECT TO TANK MONITORING UNIT. VEEDEK ROOT 1.5-40 OR EQUAL TO MONITOR TANK LEVEL & INTERSTITIAL SPACE

PROVIDE SEPARATE REQUIRED CONDUITS AND (1) SPARE CONDUIT WITH PULL STRING FROM TANK TO BUILDING INTERIOR. UNDERGROUND CONDUIT WITH AT LEAST 2' OF COVER SHALL BE SCH 80 PVC AND SHALL TRANSITION TO RIGID GALVANIZED STEEL CONDUIT 2' BEFORE THE POINT OF CONNECTION TO ABOVE GROUND FACEWAY AT THE TANK.

ALL CONDUIT SHALL INCLUDE EXPLOSION PROOF FITTINGS AS REQUIRED BY CODE.

1" SUPPLY AND RETURN PIPING FOR UNDERGROUND INSTALLATION SHALL BE DOUBLETAC MANUFACTURED BY SHERWIN WILLIAMS. NO PIPING JOINTS SHALL BE INSTALLED BETWEEN TANK AND INTERIOR FACE OF BUILDING. CONNECT TO EXISTING FUEL SYSTEM IN BUILDING. PROVIDE LINK-SEAL (OR EQUAL) AT BUILDING PENETRATIONS. PAINT ALL EXPOSED METAL PIPING WITH 1 COAT OF PRIMER (SHERWIN WILLIAMS KEM BOND HS OR EQUAL) & TWO COATS OF TOP (SHERWIN WILLIAMS PRO INDUSTRIAL URETHANE ALKYD ENAMEL OR EQUAL) COLOR TO BE SELECTED BY OWNER (TYP)

PROVIDE VISUAL & AUDIBLE OVER FILL ALARM AS REQUIRED BY CODE MOUNT TO BUILDING AS DIRECTED BY OWNER. PROVIDE EXTERIOR ALARM SILENCER & INTERIOR ALARM RESET

IMAGE DETAIL



LEGEND

	EXISTING UNDERGROUND STORAGE TANK (UST)
	WATER LINE
	SEWER LINE
	DRAINAGE LINE
	ELECTRIC LINE
	TELECOMMUNICATIONS
	UNDERGROUND FUEL LINE

SKETCH SHOWING APPROXIMATE LOCATION OF UNDERGROUND STORAGE TANK (UST) WOODSTOCK ACADEMY SOUTH CAMPUS "STUDENT CENTER"

ROUTE 169 WOODSTOCK, CONNECTICUT FIGURE 4

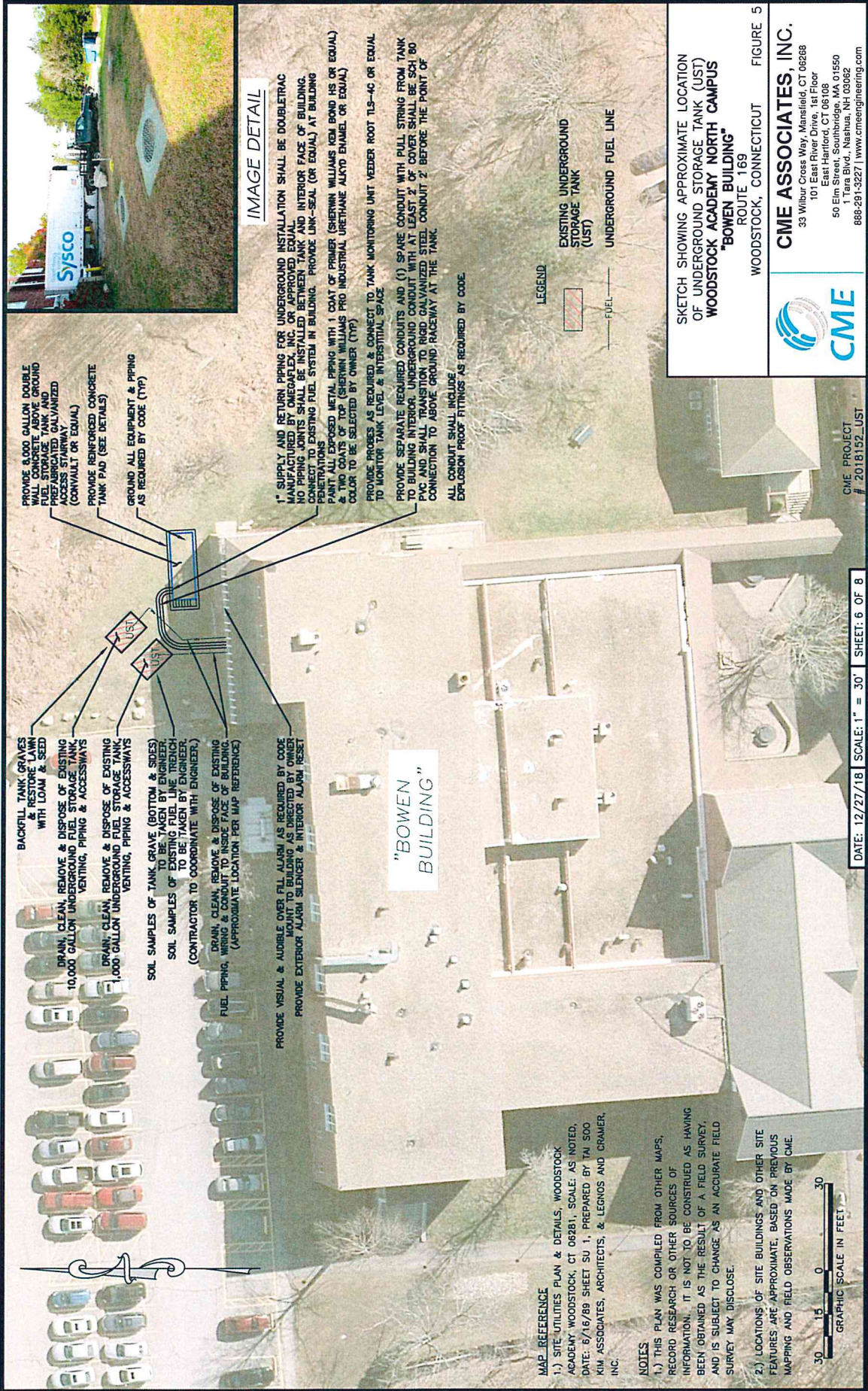


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CME PROJECT # 2018152_UST

DATE: 12/27/18 SCALE: 1" = 30' SHEET: 5 OF 8

GRAPHIC SCALE IN FEET
30 15 0 30



MAP REFERENCE

1.) SITE UTILITIES PLAN & DETAILS, WOODSTOCK ACADEMY WOODSTOCK, CT 06281, SCALE: AS NOTED, DATE: 6/16/89 SHEET SU 1, PREPARED BY TAI SOO KIM ASSOCIATES, ARCHITECTS, & LEGNOS AND CRAMER, INC.

NOTES

1.) THIS PLAN WAS COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY, AND IS SUBJECT TO CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.

2.) LOCATIONS OF SITE BUILDINGS AND OTHER SITE FEATURES ARE APPROXIMATE, BASED ON PREVIOUS MAPPING AND FIELD OBSERVATIONS MADE BY CME.

IMAGE DETAIL

PROVIDE 8,000 GALLON DOUBLE WALL UNDERGROUND FUEL STORAGE TANK AND PRE-CAST CONCRETE ACCESS STAIRWAY (CONVALLT OR EQUAL) PROVIDE REINFORCED CONCRETE TANK PAD (SEE DETAILS) GROUND ALL EQUIPMENT & PIPING AS REQUIRED BY CODE (TYP)

BACKFILL TANK GRAVES WITH LOAM & SEED DRAIN, CLEAN, REMOVE & DISPOSE OF EXISTING 10,000 GALLON UNDERGROUND FUEL STORAGE TANK VENTING, PIPING & ACCESSWAYS DRAIN, CLEAN, REMOVE & DISPOSE OF EXISTING 1,000 GALLON UNDERGROUND FUEL STORAGE TANK VENTING, PIPING & ACCESSWAYS SOIL SAMPLES OF TANK GRAVE (BOTTOM & SIDES) TO BE TAKEN BY ENGINEER SOIL SAMPLES OF EXISTING FUEL LINE TRENCH TO BE TAKEN BY ENGINEER (CONTRACTOR TO COORDINATE WITH ENGINEER) DRAIN, CLEAN, REMOVE & DISPOSE OF EXISTING FUEL PIPING, WIRING & CONDUIT TO INSIDE FACE OF BUILDING (APPROXIMATE LOCATION PER MAP REFERENCE)

PROVIDE VISUAL & AUDIBLE OVER FILL ALARM AS REQUIRED BY CODE MOUNT TO BUILDING AS DIRECTED BY OWNER PROVIDE EXTERIOR ALARM SILENCER & INTERIOR ALARM RESET

1" SUPPLY AND RETURN PIPING FOR UNDERGROUND INSTALLATION SHALL BE DOUBLETAC MANUFACTURED BY OMEGAFLUX, INC. OR APPROVED EQUAL. ALL JOINTS SHALL BE INSTALLED BETWEEN TANK AND INTERIOR FACE OF BUILDING. COUPLERS, JOINTS, AND PIPING SHALL BE INSTALLED AT BUILDING PENETRATIONS. PANT ALL EXPOSED METAL PIPING WITH 1 COAT OF PRIMER (SHERWIN WILLIAMS KEM BOND HS OR EQUAL) & TWO COATS OF TOP (SHERWIN WILLIAMS PRO INDUSTRIAL URETHANE ALKYO ENAMEL OR EQUAL) COLOR TO BE SELECTED BY OWNER (TYP) PROVIDE PROBES AS REQUIRED & CONNECT TO TANK MONITORING UNIT VEEDEE ROOT TIS-4C OR EQUAL TO MONITOR TANK LEVEL & INTERSTITIAL SPACE

PROVIDE SEPARATE REQUIRED CONDUITS AND (1) SPARE CONDUIT WITH PULL STRING FROM TANK TO BUILDING INTERIOR. UNDERGROUND CONDUIT WITH AT LEAST 2" OF COVER SHALL BE SCH. 80 PVC AND SHALL TRANSITION TO RIGID GALVANIZED STEEL CONDUIT 2' BEFORE THE POINT OF CONNECTION TO ABOVE GROUND RACEWAY AT THE TANK. ALL CONDUIT SHALL INCLUDE EXPLOSION PROOF FITTINGS AS REQUIRED BY CODE.

LEGEND

EXISTING UNDERGROUND STORAGE TANK (UST) UNDERGROUND FUEL LINE

SKETCH SHOWING APPROXIMATE LOCATION OF UNDERGROUND STORAGE TANK (UST) WOODSTOCK ACADEMY NORTH CAMPUS "BOWEN BUILDING" ROUTE 169

WOODSTOCK, CONNECTICUT FIGURE 5



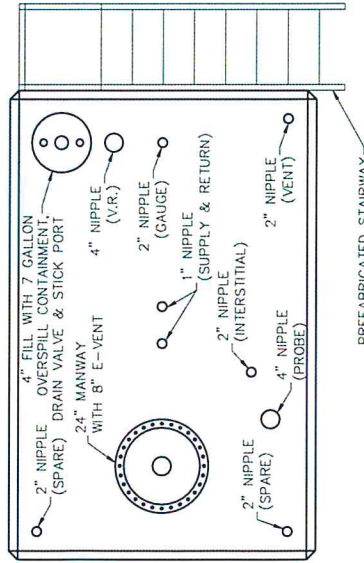
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CME PROJECT # 2018152_UST

DATE: 12/27/18 SCALE: 1" = 30' SHEET: 6 OF 8

NOTES:

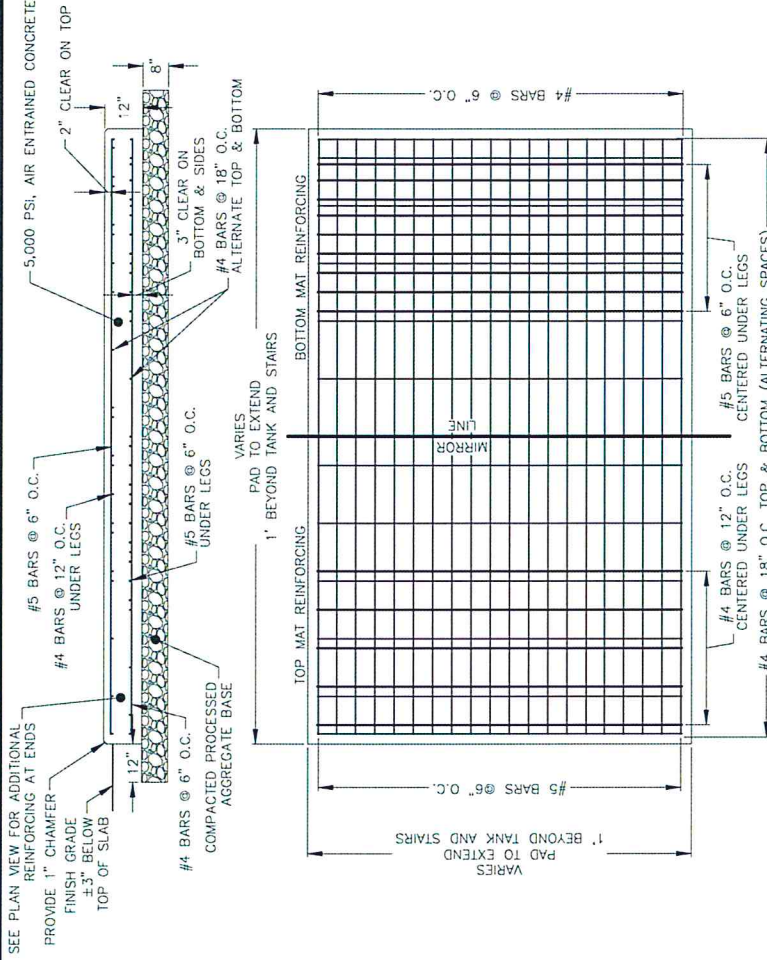
- UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING SUPPLIED BY THE RESPECTIVE UTILITY AGENCIES, FROM PAROLE TESTIMONY, FIELD MEASUREMENTS AND OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE. THE EXISTENCE OF WHICH ARE UNKNOWN TO CME. THE SIZE, LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION.
- CALL "CALL BEFORE YOU DIG" AT 1-800-922-4455 (811) AND ALL LOCAL UTILITIES THREE (3) WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL SURPLUS MATERIALS GENERATED AS PART OF THIS PROJECT.
- CONTRACTOR SHALL CONFIRM EXISTING FIELD CONDITIONS BEFORE CONSTRUCTION.
- CONTRACTOR TO OBTAIN & COMPLY WITH ALL REQUIRED PERMITS.
- ALL DEMOLITION AND CONSTRUCTION SHALL COMPLY WITH APPLICABLE FEDERAL, STATE, & LOCAL CODES.
- CONTRACTOR SHALL PROVIDE AND MAINTAIN PROTECTIVE MEASURES FOR PEDESTRIAN SAFETY AROUND EXCAVATIONS AND CONSTRUCTION ACTIVITIES, SUCH AS: CONSTRUCTION FENCE, STEEL PLATING, FLAGMEN, FLASHING BARRELS, ETC. AS REQUIRED BY OWNER.



TYPICAL TANK TOP PLAN

NOT TO SCALE

NOTE: FINAL TANK TOP LAYOUT TO BE PROVIDED BY TANK MANUFACTURER



REINFORCED CONCRETE TANK PAD

NOT TO SCALE

NOTE: PRECAST CONCRETE TANK PAD MAY BE SUBSTITUTED

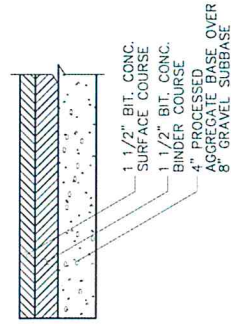
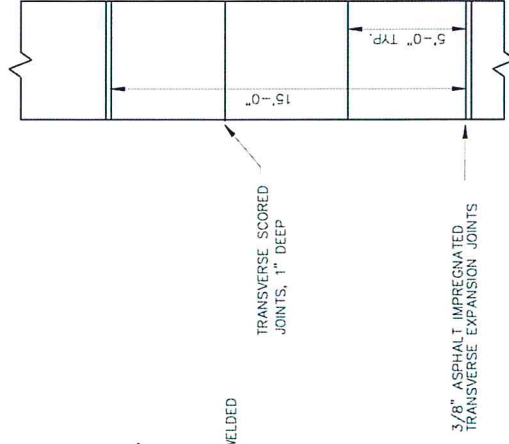
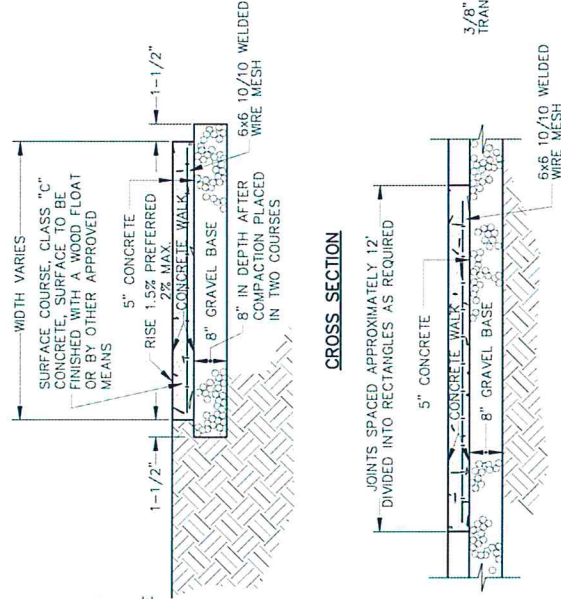
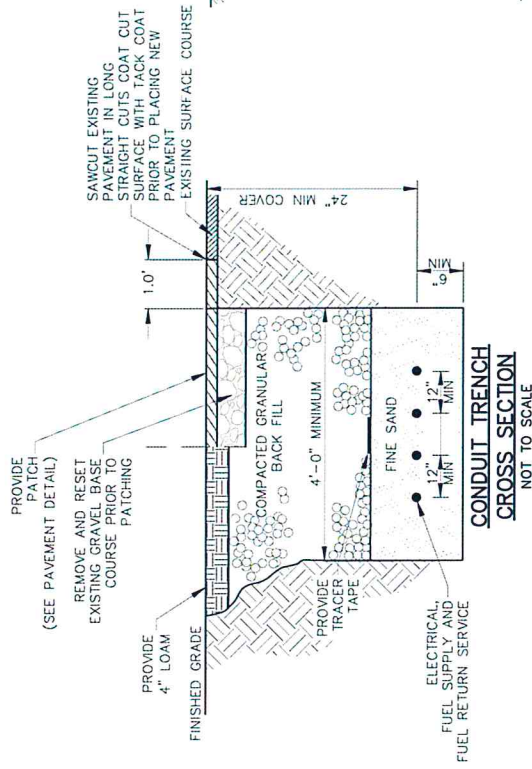
ABOVE GROUND STORAGE TANK (AST) DETAILS
PREPARED FOR
**WOODSTOCK ACADEMY NORTH CAMPUS
AND SOUTH CAMPUS**
ROUTE 169
WOODSTOCK, CONNECTICUT



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CME PROJECT
2018152_UST

DATE: 12/27/18 SCALE: NTS SHEET: 7 OF 8



ABOVE GROUND STORAGE TANK (AST) DETAILS
PREPARED FOR
**WOODSTOCK ACADEMY NORTH CAMPUS
AND SOUTH CAMPUS**
ROUTE 169
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CME PROJECT
2018152_UST

DATE: 12/27/18 | SCALE: NTS | SHEET: 8 OF 8

2018 Mitigation Monitoring Reporting
Woodstock Academy, NAE-2009-462

Corps Permit Number: NAE-2009-462

Project Name: Woodstock Academy Athletic Complex Expansion

Mitigation Site Names: Stream Channel Enhancement, Wet Meadow Enhancement

Permittee Contact Information:

Woodstock Academy, 57 Academy Road, Woodstock, CT 06281

William Guillot, Interim Associate Head of School for Finance and Operations

Email: wguillot@woodstockacademy.org

Phone: (860) 928-6575 ext. 1141

Monitoring Contact Information:

Richard Canavan, PhD, PWS

Email: rcanavan@tighebond.com

Phone: (860) 933-1369

Dates of Inspection: October 18, 2018

Locations and Directions to Mitigation Sites: The project site is the Woodstock Academy Bentley Athletic Facility located at 475 Route 169 in Woodstock CT. The Wet Meadow Mitigation Area (WMMA) is west of the track and the Stream Channel Enhancement Area (SCEA) is west of the softball field.

Start and Completion of Mitigation: The mitigation work for the project began in March of 2012 and was completed in August 2012.

Site Monitoring History:

The initial implementation of the mitigation areas by mowing and planting was monitored during the construction period in 2012. Spring and fall monitoring of the mitigation areas with annual reporting was made in 2013, 2014 and 2015. In 2016 spring and fall monitoring was conducted but only limited reporting was available. No monitoring or reporting occurred in 2017. In 2018 Woodstock Academy and the USACOE discussed resuming monitoring and determined that a 3rd party review would no longer be required. Copies of past reporting was provided to USACOE during the discussion of the project in 2018.

Requirements:

The development of this mitigation plan required a conservation easement in the wet meadow area, which was issued to a third party (the Trustees of Roseland Park) at the start of the construction project. The mitigation plan required bonding which was also put in place prior to the start of the project. A release on the construction portion of the bonding was previously requested.

The reporting for this mitigation is copied to the Town of Woodstock Inland Wetlands and Watercourses Agency and CT DEEP Land and Water Resources Division as conditioned in the construction project approvals.

Current observed conditions at the two mitigation areas and compliance with the performance standards for those areas are presented separately for the Wet Meadow Mitigation Area and the Stream Channel Enhancement Area. Additional information includes project photos from the recent monitoring and older reference photos, and mitigation design plans.

Wet Meadow Mitigation Area

During the development of the mitigation plan for this project the Wet Meadow Mitigation Area (WMMA) was identified as a less common vegetation cover type that was in the process of transitioning to shrub-scrub cover. The plan for this mitigation area was to mow annually to maintain the sedge-dominated meadow vegetation coverage. This approach has been successful to date and the WMMA continues to meet its success criteria.

The performance standard for the WMMA is, “the maintenance of this area as a sedge dominated wet meadow. Woody species should remain less than 5% cover of the area.”

The Mitigation Plan lists the following elements for monitoring:

- Identify woody shrubs in the area (by species and % cover or number of individuals)
- Identify the presence of herbaceous invasive/colonial species in the area and assess whether their presence appears to threaten the existing plant diversity
- Identify any bare soil or other areas that may have been damaged by mowing

The presence of woody plants in the WMMA is very limited, primarily with small stem regrowth near areas that are difficult to mow such as the existing ditches. The total percent coverage by woody plants is less than 1% of the WMMA and the woody species observed are listed in Table 1.

Table 1. Woody tree, shrub and vine species observed in the WMMA on 10/18/18

Common name	Scientific name
Willow	<i>Salix</i> sp.
Silky dogwood	<i>Swida amomum</i> (<i>Cornus amomum</i>)
Oriental bittersweet	<i>Celastrus orbiculatus</i>
White meadowsweet	<i>Spiraea alba</i>
Winterberry	<i>Ilex verticillata</i>

The herbaceous invasive species observed in the WMMA were purple loosestrife (*Lythrum salicaria*) and reed canary grass (*Phalaris arundinacea*). These species have been observed in the WMMA since before mowing was started and neither species appears to be expanding their presence in the area in the years after annual mowing. The native colonial species cattail (*Typha latifolia*) is present in some areas of the WMMA and beyond the mowed area to the north. Cattail is growing in soils with a permanently to semi-permanently saturated water regime and are not growing with a density to fully exclude other species. This is unlike cattail monospecific stands in areas of permanent open water. A list of herbaceous species observed during the October site inspection is provided in Table 2.

No bare areas were observed based on mowing. Bare soils are present near the WMMA where mowers or other vehicles are accessing a lawn area southwest of the track.

The dominant vegetation observed in the WMMA remains a sedge. This sedge is thought to be tussock sedge (*Carex stricta*) growing in a non-tussock form in this area. The grass bluejoint (*Calamagrostis canadensis*) is a co-dominant in parts of the WMMA and to the north of the mowed area.

Table 2. Herbaceous plant species observed in the WMMA on 10/18/18

Common name	Scientific name
tussock sedge	<i>Carex stricta</i>
bluejoint	<i>Calamagrostis canadensis</i>
aster	<i>Aster sp.</i>
purple Joe-Pye weed	<i>Eutrochium purpureum</i>
bedstraw	<i>Galium sp.</i>
jewelweed	<i>Impatiens capensis</i>
purple loosestrife	<i>Lythrum salicaria</i>
sensitive fern	<i>Onoclea sensibilis</i>
cinnamon fern	<i>Osmunda cinnamomea</i>
arrow-leaved tearthumb	<i>Persicaria sagittata</i>
reed canary grass	<i>Phalaris arundinacea</i>
common wrinkle-leaved goldenrod	<i>Solidago rugosa</i>
dandelion	<i>Taraxacum officinale</i>
cattail	<i>Typha latifolia</i>
blue vervain	<i>Verbena hastata</i>

WMMA Conclusions and Recommendations

This mitigation area continues to meet its performance standards as annual mowing is proving effective to control succession to a shrub swamp and native herbaceous vegetation maintain dominance in the mowed area.

It is recommended that the rutting area at the chainlink fence southeast of the WMMA be repaired. This could either be by not driving through this area and allowing revegetation or if access must be maintained then by stabilization of the access way with gravel or woodchips.

During mowing of the WMMA the operator will need to be aware of the existing ditches in WMMA. Most of the ditches do not flow outside of rain events; however, one constructed channel conveys water that flows through a culvert under the cart path northward through the WMMA to the irrigation pond. The stability of this ditch should be monitored to avoid mowing impacts and to ensure that off-site flows do not result in erosion in this channel.

A row of white pines (*Pinus strobus*) has been planted between the WMMA and the irrigation pond. The white pines allow for upland invasive plants multiflora rose (*Rosa multiflora*) and oriental bittersweet (*Celastrus orbiculatus*) to establish and grow toward the WMMA. Periodic vegetation cutting to control invasives in the pines is also recommended as feasible.

Stream Channel Enhancement Area

The goal of the SCEA mitigation as described in Section 9.1 of the project Mitigation Plan is provided here for reference.

The Stream Channel Enhancement Area includes a dominant invasive species - reed canary grass (*Phalaris arundinacea*) and a significant amount of multiflora rose (*Rosa multiflora*). The control of these species includes cutting and removing invasive plants, herbicide treatment, and the dense planting of shrubs, including fast growing native species of willow and dogwood. The development of the shrub canopy is proposed as the long-term control for reed canary grass and will also limit suitable sites for woody invasives. Shading by woody plants is the preferred invasive species control measure at this area because it is low maintenance, it helps restore values lost at the wetland impact area, and it is complimentary to the forested wetland present to the north and west.

The performance standard for this area is derived from the NAE Mitigation Standards and is 60% cover by noninvasive hydrophytes of which 15% are woody species.

The SCEA currently meets its performance standards with nearly complete aerial coverage by native woody hydrophyte shrubs. The woody canopy has limited the growth of reed canary grass, and now invasive coverage is less than 10% and meets the mitigation performance standard established for the SCEA. Vegetation data plot results for the reference area and planted area are provided (Table 3).

Table 3. SCEA Vegetation Plots 10/18/2018

Reference Plot		Mitigation Plot	
Species	% cover	Species	% cover
Tree Stratum: The plot areas were truncated to fit within the mitigation area. No trees were present in either the reference or mitigation plot area. The area to the west is dominated by red maple trees			
Shrub/sapling (15 ft. radius)		Shrub/sapling (15 ft. radius)	
<i>Alnus incana</i>	80	<i>Alnus incana</i>	90
<i>Salix</i> sp.	20	<i>Salix</i> sp.	10
<i>Cornus amomum</i>	10	<i>Viburnum dentatum</i>	5
		<i>Vaccinium corybosum</i>	1
		<i>Lindera benzoin</i>	1
		<i>Fraxinus pennsylvanica</i>	1
		<i>Cornus amomum</i>	1
Herbaceous (5 ft. radius)		Herbaceous (5 ft. radius)	
<i>Impatiens capensis</i>	5	<i>Solidago</i> sp.	10
<i>Solidago</i> sp.	1	<i>Acer rubrum</i>	2
<i>Celastrus orbiculatus</i>	1	<i>Lindera benzoin</i>	2
		<i>Onoclea sensibilis</i>	1
		<i>Spirea alba</i>	1
		<i>Celastrus orbiculatus</i>	1

The SCEA was planted with six different native shrubs. All of the planted species are still present in the mitigation area; however, speckled alder is by far the most successful with a dominance in the shrub canopy throughout the mitigation area. Alder was already dominant in the areas of existing shrub coverage so it is not surprising that the planted areas have responded in a similar manner. Previous reporting found that the average height of planted shrubs increased from 5-6 feet in 2014 to 10-15 feet in 2015. Since 2015 the aerial coverage of shrubs in the planted areas increased to form a full canopy and reduced the density of the herbaceous layer.

The area west of the SCEA is a forested seepage slope wetland with red maple (*Acer rubrum*) as the dominant tree in the canopy. Shrubs present in the forested wetland include spicebush (*Lindera benzoin*), winged euonymus (*Euonymus alatus*), and multiflora rose (*Rosa multiflora*). All of these species are also present in the SCEA, particularly at the margin of the forested wetland and mitigation area. Two of the shrubs, winged euonymus and multiflora rose, are non-native invasive species. They are present but with a total cover of less than 5%. A significant increase in their density or coverage is not anticipated because the shading and wetland hydrology in this area is not optimal for those species.

SCEA Conclusions and Recommendations

The SCEA now meets the Mitigation Plan performance standards. Woody shrubs, primarily alder, have provided biocontrol of reed canary grass in an area that previously had no canopy. This is the first monitoring period where the SCEA was observed to meet the mitigation plan performance standards.

The biocontrol method of reed canary grass control should continue to be effective without additional maintenance of the SCEA. Given the density and coverage of alder in the SCEA dominance by other woody invasives (e.g. multiflora rose, winged euonymus) is not anticipated.

The stream in the SCEA was constructed during the initial construction of the athletic facility (before the expansion that was the subject of this mitigation project). The water elevation in the stream was very high during the October 2018 observation. This fall has been particularly wet; however, woody debris and leaves may be blocking flow in the stream. In discussion with the operations staff of the athletic fields, high water levels in the stream are interfering with field drainage and at times mean that the softball field adjacent to the SCEA to the east can not be used. Hand work to maintain flow in the stream by removing obstructions in the channel and to maintain field drainage is recommended as necessary.

Conclusions

This project included two mitigation areas, the Wet Meadow Mitigation Area (WMMA) and Stream Channel Enhancement Area (SCEA), which now both meet their performance standards. The approach of the project Mitigation Plan was to take relatively simple actions to improve conditions within existing wetlands at the project site. The mitigation proposed did not include grading, creating wetland soils, or the modification of existing hydrology in order to improve the likelihood of success with the mitigation. The management actions; mowing in the WMMA and planting shrubs in the SCEA were also looking to match or maintain reference conditions present in those wetlands. Based on the 2018 monitoring, the mitigation for this project has been successfully completed.

Site Photos

Client: The Woodstock Academy

Permit Number: NAE-2009-462

Site: Woodstock Academy Athletic Complex Expansion

Photograph No.: 1	Date: 7-10-2009	Direction Taken: North
Description: Older photo showing WMMA before mowing started (from previous mitigation reports)		



Photograph No.: 2	Date: 10-30-2015	Direction Taken: North
Description: WMMA after mowing in 2015 (from previous monitoring reports)		



Site Photos

Client: The Woodstock Academy

Permit Number: NAE-2009-462

Site: Woodstock Academy Athletic Complex Expansion

Photograph No.: 3	Date: 10-18-2018	Direction Taken: North
Description: WMMA during 2018 inspection (reference photo location)		



Photograph No.: 4	Date: 10-18-2018	Direction Taken: South
Description: View within WMMA.		

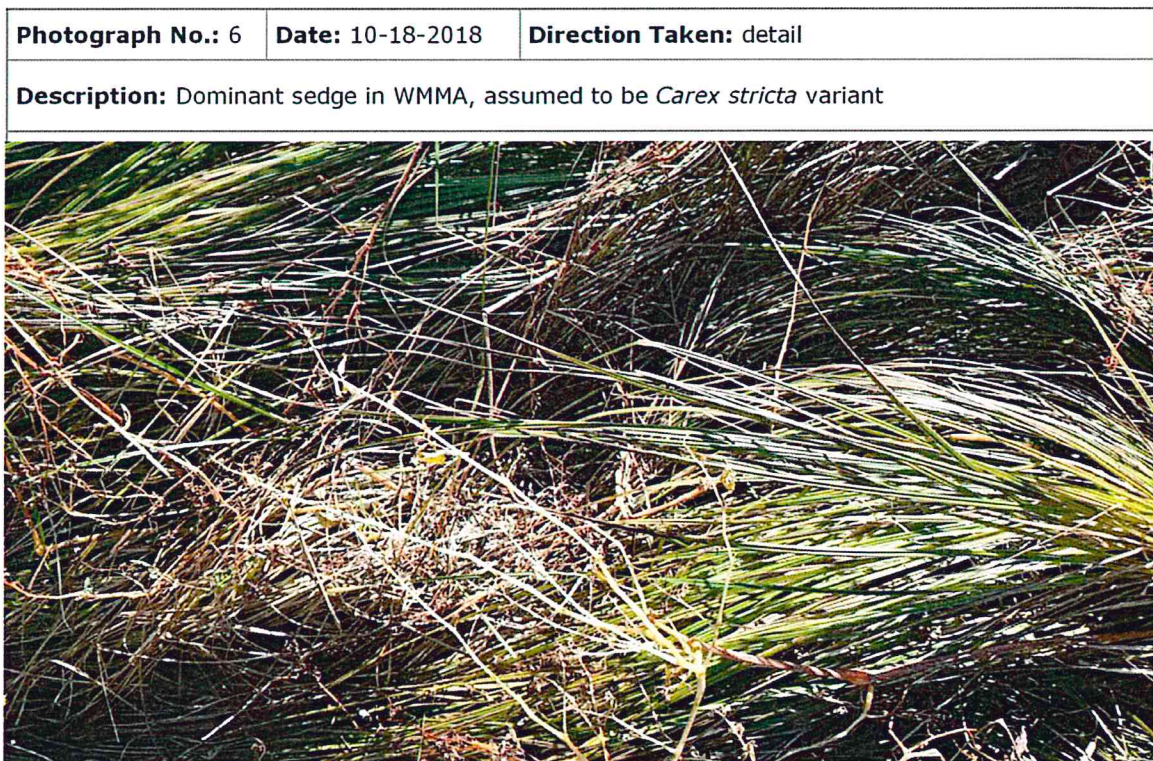


Site Photos

Client: The Woodstock Academy

Permit Number: NAE-2009-462

Site: Woodstock Academy Athletic Complex Expansion



Site Photos

Client: The Woodstock Academy

Permit Number: NAE-2009-462

Site: Woodstock Academy Athletic Complex Expansion

Photograph No.: 7	Date: 7-17-2014	Direction Taken: southwest
Description: SCEA mitigation area following shrub planting, note areas of existing shrub canopy (from previous monitoring reports)		



Photograph No.: 8	Date: 10-18-2018	Direction Taken: northwest
Description: View of SCEA from softball field during 2018 monitoring visit		



Site Photos

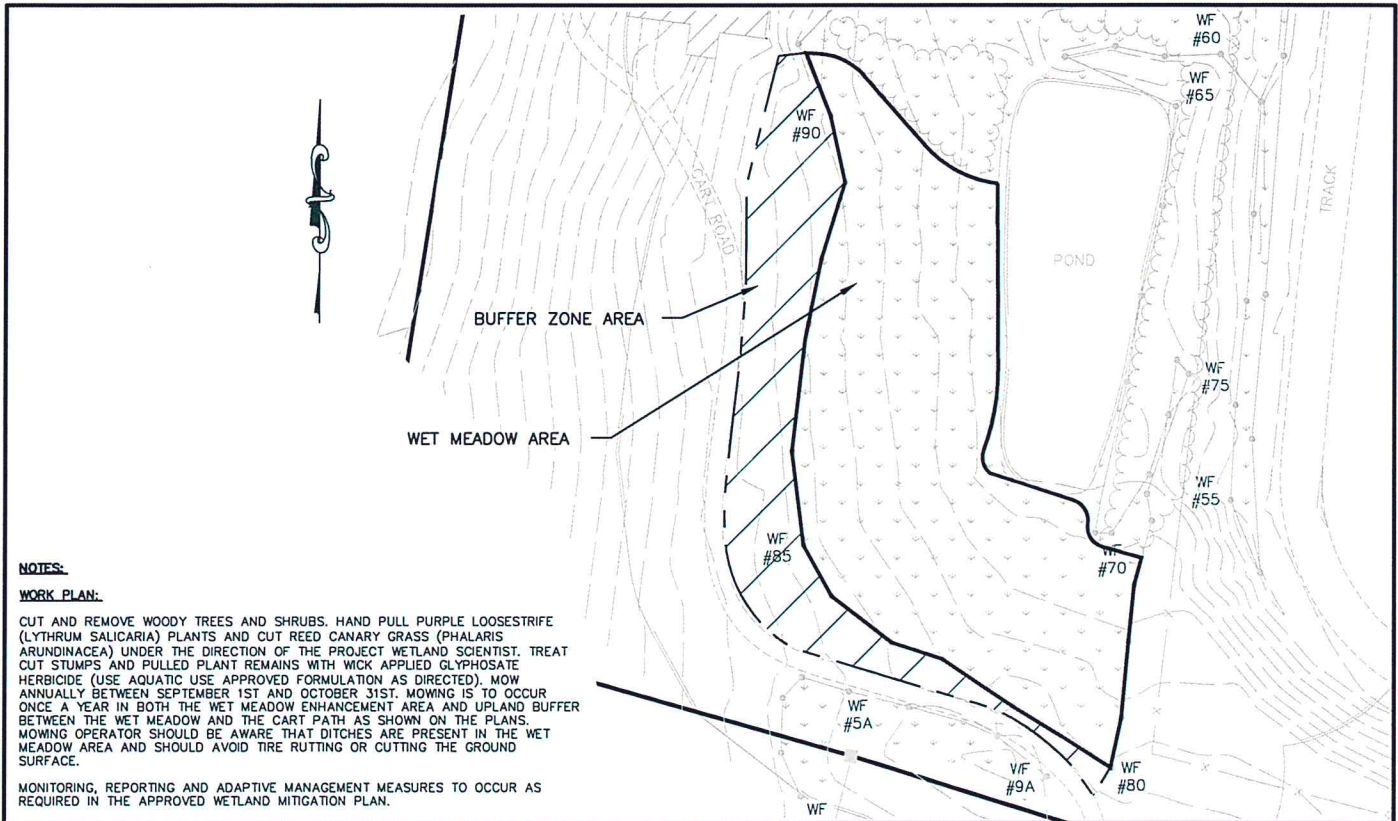
Client: The Woodstock Academy

Permit Number: NAE-2009-462

Site: Woodstock Academy Athletic Complex Expansion

Photograph No.: 9	Date: 10-18-2018	Direction Taken: vegetation detail
Description: Typical planted shrubs in SCEA		
		

Photograph No.: 10	Date: 10-18-2018	Direction Taken: vegetation detail
Description: Reference area in SCEA		
		


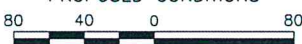


NOTES:

WORK PLAN:

CUT AND REMOVE WOODY TREES AND SHRUBS. HAND PULL PURPLE LOOSESTRIFE (LYTHRUM SALICARIA) PLANTS AND CUT REED CANARY GRASS (PHALARIS ARUNDINACEA) UNDER THE DIRECTION OF THE PROJECT WETLAND SCIENTIST. TREAT CUT STUMPS AND PULLED PLANT REMAINS WITH WICK APPLIED GLYPHOSATE HERBICIDE (USE AQUATIC USE APPROVED FORMULATION AS DIRECTED). MOW ANNUALLY BETWEEN SEPTEMBER 1ST AND OCTOBER 31ST. MOWING IS TO OCCUR ONCE A YEAR IN BOTH THE WET MEADOW ENHANCEMENT AREA AND UPLAND BUFFER BETWEEN THE WET MEADOW AND THE CART PATH AS SHOWN ON THE PLANS. MOWING OPERATOR SHOULD BE AWARE THAT DITCHES ARE PRESENT IN THE WET MEADOW AREA AND SHOULD AVOID TIRE RUTTING OR CUTTING THE GROUND SURFACE.

MONITORING, REPORTING AND ADAPTIVE MANAGEMENT MEASURES TO OCCUR AS REQUIRED IN THE APPROVED WETLAND MITIGATION PLAN.

 <p>CME Associates, Inc.</p> <p>33 Oakline Lane, Woodstock, CT 06091 33 Main Street, Suite 240 Hartford, CT 06103 333 East River Drive, East Hartford, CT 06108 50 Elm Street, Southbridge, MA 01550 phone 860-291-3227 www.cmeengineering.com</p>	<p>PROPOSED CONDITIONS</p>  <p>GRAPHIC SCALE IN FEET 1"=80'</p>	<p>WET MEADOW ENHANCEMENT-MITIGATION</p> <p>ATHLETIC COMPLEX EXPANSION AT: ROUTE 169, WOODSTOCK, CT APPLICATION BY: WOODSTOCK ACADEMY</p>	<p>DATE: FEBRUARY 2010</p> <p>SHEET 8 OF 12</p>
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